

Memorandum

Date: July 2, 2010
Telephone: (916) 654-4781
File: 09-AFC-5

DOCKET

09-AFC-5

DATE JUL 02 2010

RECD. JUL 02 2010

To: Commissioner Anthony Eggert, Presiding Member
Commissioner James Boyd, Associate Member
Kourtney Vaccaro, Hearing Officer

From: California Energy Commission - Craig Hoffman
1516 Ninth Street Siting Project Manager
Sacramento, CA 95814-5512

Subject: **ABENGOA MOJAVE SOLAR 09-AFC-5**
ENERGY COMMISSION STAFF'S SUPPLEMENTAL OPENING TESTIMONY REGARDING
PROPOSED CONDITION OF CERTIFICATION WORKER SAFETY-6

Energy Commission staff offer this Supplemental Opening Testimony regarding staff's proposed Condition of Certification **WORKER SAFETY-6**.

cc: Proof of Service List
Docket 09-AFC-5

PROOF OF SERVICE (REVISED 6/8/10) FILED WITH
ORIGINAL MAILED FROM SACRAMENTO ON 7/2/10
TKG

**Abengoa Mojave Solar
Staff's Opening Testimony
June 29, 2010**

**Worker Safety/Fire Protection
Alvin Greenberg, Ph.D.**

Staff offers this supplemental Opening Testimony regarding staff's proposed Condition of Certification **WORKER SAFETY-6**

WORKER SAFETY-6

This proposed condition would require mitigation of direct and cumulative project-related impacts to the San Bernardino County Fire Department (SBCFD). The applicant is requesting the removal of any dollar amount from the options listed. The applicant claims that the presence of a dollar amount would inhibit negotiation with the SBCFD.

Staff is sympathetic to all parties who must deal with this very difficult issue of mitigation. However, the California Environmental Quality Act (CEQA) requires staff to identify impacts and propose appropriate mitigation and not defer mitigation to some later negotiation. While staff strongly supports the project owner reaching an agreement with the SBCFD regarding funding of its project-related share of costs to provide appropriate mitigation of project-related impacts on fire protection, accidental spills/releases of hazardous materials (Hazmat), rescue, and emergency medical services (EMS services), it cannot abrogate its responsibility under CEQA to propose feasible mitigation.

Background

Since the publication of the Revised Staff Assessment, staff has continued to review the emergency response needs of the proposed solar power plants which would be located in San Bernardino, Riverside, and Kern Counties. Staff has also met with the SBCFD and the Riverside County Fire Department. Staff has considered the position of the SBCFD and all relevant information as well as past experience at existing solar power plants that are similar to but smaller than the proposed AMS project. Staff reviewed the records of emergency responses of the San Bernardino County Fire Department (SBCFD) to the only three thermal solar power plants in the state. These are the Solar Electric Generating Station (SEGS) 1 & 2 (43.8 MW) in Daggett (operating since 1984), SEGS 3-7 (150 MW) at Kramer Junction (1989), and SEGS 8 & 9 (160 MW) at Harper Dry Lake (1989). Staff also reviewed what records were immediately available at the three solar plants. All sources stated that their records were incomplete and not comprehensive. Staff believes that the past experience at the three active thermal solar power plants in San Bernardino County is applicable to all similar solar power plants being proposed regardless of the county involved. Staff offers this background information as a basis to support staff's contention that no matter where the solar plant is located, the local fire department having jurisdiction will have to provide some level of services in five areas of response:

1. Plan reviews, inspections, and permitting
2. Fire response
3. Hazmat spill response
4. Rescue
5. Emergency Medical Services (EMS)

Past Fire Department Responses at Existing Thermal Solar Power Plants

Three types (as categorized by the SBCFD) of fire department responses to the solar power plants were surveyed (CEC 21010r; CSBFD 2010a, d, e, f, and h):

1. Plan reviews
2. Hazmat and fire inspections
3. Emergency Response including medical, fire, rescue, and hazardous materials incidents

Regarding visits to the sites for plan review during the years the plant was operating, the SBCFD made four visits to the Kramer Junction facility and one visit to the Harper Lake facility.

Regarding site visits for inspections, reviews, enforcement activities, and follow ups, the SBCFD made 10 inspections to Daggett since 2008, totaling 24 hours of time, 48 visits to Kramer Junction since 2003, totaling 128 hours of time, and 29 visits to Harper Lake since 2004, totaling 105 hours of time.

Including emergency response for fire, rescue, medical and hazardous materials incidents, approximately 30 incidents occurred since 1998 that required the SBCFD (and other fire stations through mutual aid agreements) to respond to the three solar power plant sites. These included fires, fire alarm activations, injuries, medical emergencies, hazardous materials spills, complaints/calls from the public, and false alarms. However, the available records did not include documentation of a major fire at the SEGS 8 facility (80 MW) in January of 1990 that required a large part of the regional resources from four different fire districts including the San Bernardino County, Edwards Air Force Base, California Department of Forestry (now Cal Fire), and the Kern County fire departments (CSBFD 2010c). Note that AMS is 250 MW, at one site. This fire is the largest incident that has occurred at a solar thermal plant in California and demonstrates the magnitude of fire department resources that can be required to respond to a fire at a large thermal solar facility. The inability to quickly control this event had ramifications for the project's finances and reliability - it took almost two years to bring the SEGS 8 heaters back on-line and supplement the solar field generation.

According to the Daggett solar plant records, only three incidents in the life of the plant required emergency services (CEC 2010p):

1. Feb 25, 1999: An HTF fire occurred in the HTF tanks. This was a major fire and the fire department allowed the fire to burn itself out over 2 days. There were no injuries, but extensive damage occurred.

2. Feb 28, 2000: An employee had a suspected heart attack (which was actually caused by drinking a whole bottle of hot sauce), and an ambulance responded from the fire department.
3. May 15-17, 2010: An HTF spill of about 60 gallons occurred in the solar field. The facility personnel cleaned it up on May 15 and reported it to San Bernardino County on the next business day, May 17. When receiving the report the dispatcher misunderstood the report and sent out a 911 call indicating a spill is in progress. The whole fire department showed up on scene.

According to information received from the Kramer Junction plant, the following incidents required fire department response:

1. August 2002 for an unknown HazMat incident.
2. In 2007 when 30,000 gallons of HTF spilled.
3. In Feb. 2009 when a flex hose failure and a vapor cloud ignited. According to Kramer Junction plant officials, the fire department was not needed as plant staff had the situation under control. A concerned citizen had made a 911 call.

According to information received from the Harper Lake plant, only the January 1990 fire required fire department response.

To summarize, relying on sparse data received from the SBCFD for only the past 10 years and not including the 1990 SEGS 8 fire, the department responded to about 30 incidents and emergencies at the three solar locations, including two fires and two hazardous materials spills. During the same period, the SBCFD conducted approximately 90 inspections and visits for enforcement actions/plan reviews, totaling about 260 hours of personnel time. The incident rate, therefore, for all three power plants would be 30 in 12 years or 2.5 emergency calls per year or 0.83 emergencies per solar plant per year. [Note: Staff wishes to caution that since the number of thermal solar power plants is so few and their operating history so short, any conclusion as to accident incident rates is weak from a statistical perspective. Simply put, the data set is not robust enough to draw any definitive conclusions about the safety records of these solar power plants. Nevertheless, this information and the incidence rate of emergency response are provided to give a general idea of the past need for emergency response.)

Analysis of Impacts Due to the Abengoa Mojave Solar Project

The proposed power plant would be located in an area that is currently served by the SBCFD. Within 15 miles is SBCFD Station #125 located in Hinkley, which is not permanently staff, but served by trained on-call local fire fighters and led by an off-site Battalion Chief. According to the SBCFD, the station may or may not be able to respond, and if they do, may only be able to respond with one or two engines, depending upon the number of fire fighters who respond to the fire station. The next stations to respond (Silver Lakes/Helendale Station and the Harvard Station) would take 20 to 50 minutes to respond.

The proposed AMS solar power plant (250 MW) is very different from the industrial, commercial, and residential development in the San Bernardino County desert region. It

is also different from the existing solar plants located at Harper Lake and Kramer Junction in San Bernardino County. The AMS solar power plant would be larger in scale than the existing solar power plants and will have a huge amount of highly flammable oxygenated heat transfer fluid in use at elevated temperatures and stored on site, approximately 2,300,000 gallons. The amount of highly flammable oxygenated flammable material stored and used on-site, combined with the rather remote location and the potential for escalation of a small fire into a large conflagration, presents an emergency response challenge for the SBCFD.

Presently, the SBCFD is not able to respond to fire, hazmat, rescue, and EMS emergencies in a timely manner at the AMS power plant. Staff has visited the SBCFD fire station at Hinkley (Station #125). The station is small and out-dated with no room for fire fighters to stay over-night. The standard fire department response for a fire or for a hazmat spill includes response of six engines and at least three fire fighters on each engine. To fight a fire inside a structure, the SBCFD must adhere to standard operating procedures and Cal-OSHA regulations that require "two in, two out" (OSHA 2010a). Thus, a response of three fire fighters from one station would not allow fire fighters to attack a fire from within a structure or conduct a rescue. Confined space and collapsed trench rescues would also be problematic with only three fire fighters. Therefore, no matter what size the fire or how many workers are initially in need of rescue, the SBCFD would dispatch engines from at least three fire stations so that at a minimum, nine firefighters are sent to the scene but the SBCFD would eventually dispatch a total of 9 engines. Even if mutual aid was available and a mutual aid pact was in effect, the SBCFD would still have to respond to an emergency at the AMS site because it is the Authority Having Jurisdiction.

Additionally, it is very important to note that the AMS power plant (along with the other solar power plants) will be located in an extremely harsh desert environment. The ability of a fire fighter to perform duties while wearing a turn-out coat, heavy boots, and a respirator (self contained breathing apparatus) is limited under the best of circumstances. If conducting a rescue or fighting a fire that necessitates use of a respirator, the high-temperatures of the desert, often exceed 115° F, severely limits a fire fighter's ability to perform the duties to 15 minutes at a time. This severe time restriction necessitates the mobilization of more fire fighters to respond to the emergency.

Staff has considered the position of the SBCFD and all relevant information as well as past experience at existing solar power plants that are similar to the proposed project. The proposed facility would be located in an area that is currently served by the SBCFD. The inspection, fire, hazmat, rescue, and EMS needs at the proposed AMS power plant are real and would pose significant added demands on local fire protection services. In addition, staff finds that the SBCFD's Hazmat Response Team cannot respond to hazardous materials incidents at the proposed facility with an adequate response time due to the great distant involved. Staff has determined that the AMS power plant would cause a significant direct and cumulative impact on the local fire department. Staff also noted that the potential exists for a fire to escalate not only within

the solar power plant but beyond the power plant into a wild land fire. Even though this is a desert environment, the scrub grasses and native plants are concentrated enough to sustain a wild fire. Thus, a fire at the AMS site would place the nearby homes at risk and possibly require more fire equipment and personnel. Note that the site is 1765 acres, with a 10 mile fence line. The personnel and equipment needed to survey and control this large perimeter to ensure a fire does not spread from the site is considerable.

The County of San Bernardino is faced with a multitude of renewable energy projects proposed or considered for formal proposal. Some are wind and photovoltaic while others are solar thermal projects that utilize large volumes of flammable heat transfer fluid (AMS) or large volumes of highly flammable and explosive hydrogen gas (Calico). All the projects are remotely located in the Mojave Desert in the largest county in the United States. Response times for rescue, EMS, and fire suppression to these remote sites would be very high even for a rural environment. The SBCFD has begun planning to provide services for these projects and has produced a map showing the potential locations of renewal energy facilities, existing fire stations, and possible new fire stations (CSBFD 2010k). Under CEQA, staff must take into consideration the direct individual project impacts to fire protection services as well as the cumulative impacts. Staff also notes that budgetary shortfalls that impact fire services are common today and San Bernardino County is no exception. These fiscal impacts limit the SBCFD from providing the services that are needed to fulfill its mission.

Mitigation

Regarding potential mitigation, staff is proposing Condition of Certification **WORKER SAFETY- 6** that requires the AMS power plant to either negotiate a mitigation fee agreement with the SBCFD to fund fire department capital improvements and make an annual payment to mitigate the project's individual impacts and its share of a cumulative impact on the fire department.

Alternatively, staff suggests that AMS form and join a solar industry group or association that will provide membership to all solar power plants located within the jurisdiction of the SBCFD or even across the greater California desert region to negotiate payment for their project-related shares of capital and operating costs to build and operate new fire protection/response infrastructure for these large, remote industrial facilities. The group could ensure appropriate equipment and personnel as mitigation of project-related impacts on fire protection services on the most cost-effective basis. Staff proposes that the project owner be given this option to form and join a power generation industry association or group so that this association or group could negotiate payment for their project-related shares of SBCFD capital and operating costs. The association would be able to raise funds, negotiate payment for emergency response services with the SBCFD, and audit county and district fire department protection/emergency response expenditures to ensure that funds go towards associated emergency response needs. And, most importantly, develop and implement an appropriate fee structure for its members based on project characteristics (e.g., size, technology, chemical usage, or project location relative to emergency response infrastructure) and the re-payment of

funds provided by its initial members upon the joining of new members. Staff urges the applicant and the Committee to consider this approach.

Also, staff has developed an Emergency Response Matrix that staff, the fire departments, and project owners may use to assess the level of emergency response need (CEC 2010q). This analytical tool has a weighting scheme for the various categories of fire department response and utilizes professional judgment in the assignment of the "score" to the categories. Staff has tested this methodology on existing and planned solar power plants and finds it to be useful but cautions against using it as the sole basis for determining need or for allocating financial responsibility for direct individual or cumulative impacts. Otherwise, staff recommends that the applicants prepare an independent fire needs assessment and a fire risk assessment for this and each solar project to best assess impacts on emergency response services in the jurisdictions.

The SBCFD has modified this tool to address its own needs and has used it in part to arrive at its estimated allocated costs for the AMS power plant (CSBFD 2010b; CSBFD 2010k Table 4). The minor difference in what staff calculated using the matrix for the AMS project and that which the SBCFD calculated using its modified matrix are not significant; both resulted in a score that the AMS project is a very high priority of needing additional resources and mitigation. The amount of money proposed in the Condition of Certification is based on a thorough review by SBCFD of its present capabilities and needs. Staff met with representatives of the SBCFD and expert consultants hired by the fire department to develop costs for capital improvements and annual operating and maintenance (O&M) and allocate these costs to new projects proposed for construction in the County. The SBCFD states that it needs three additional fire stations, upgrades to three existing fire stations, and three new fire engines and appropriate staffing in order to provide adequate service and emergency response to 14 proposed renewable energy projects in the county (CSBFD 2010i and j). Using the analysis prepared by Hoffman and Associates for the County of San Bernardino (CSBFD 2010l), the county determined that a total capital cost of \$12,539,000 would be needed. Using the Emergency Response Matrix and weighting it for the size in MW of each energy project and applying an "allocation factor" of 29% for solar project based upon fire department service calls to various land use categories in 2009, the SBCFD determined that the AMS project should be allocated \$860,000 of these costs for capital improvements. As for annual O&M and staffing costs, \$793,000 (CSBFD 2010l) was found by the above method to be the appropriate allocation for the AMS project. The County has committed to fund the remaining 71 percent of the costs through taxes and general fund expenditures to ensure that the needed fire stations, upgrades, and staffing are provided.

Staff has reviewed the cost figures and map of proposed renewable energy facilities and fire stations prepared by the county and finds the costs to be reasonable and consistent with the costs per square foot for building a fire station, for a new fire engine, and for fire fighter salaries and benefits. Staff also agrees that the SBCFD's methodology for allocating costs of building and staffing new and upgraded fire stations

that the proximity of a home to the AMS plant causes the increased score due to risk of fire or explosion. Staff furthermore bases its determination, in part, on its professional experience and judgment.

Staff recommends that **WORKER SAFETY-6** be revised as follows:

WORKER SAFETY-6 The project owner shall either:

(1) Reach an agreement, either individually or in conjunction with a power generation industry association or group that negotiates on behalf of its members, with the San Bernardino County Fire Department (SBCFD) regarding funding of its project-related share of capital and operating costs to build and operate new fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire protection services within the jurisdiction.

or

(2) Shall fund its share of the capital costs in the amount of \$860,000 and provide an annual payment of \$793,000 to the SBCFD for the support of new fire department staff and operations and maintenance commencing with the start of construction and continuing annually thereafter on the anniversary until the final date of power plant decommissioning.

Verification: At least thirty (30) days prior to the start of site mobilization, the project owner shall provide to the CPM:

(1) A copy of the individual agreement with the SBCFD or, if the owner joins a power generation industry association, a copy of the bylaws and group's agreement/contract with the SBCFD.

or

(2) Documentation that the amount of \$860,000 has been paid to the SBCFD, documentation that the first annual payment of \$793,000 has been made, and shall also provide evidence in each January Monthly Compliance Report during construction and the Annual Compliance Report during operation that subsequent annual payments have been made.

References

CEC 2010p- CEC / S. Greenberg (TN 57272). ROC Between R. Frymyer General Manager for SEGS 1 and 2 and Shon Greenberg. Submitted to CEC on 6/22/2010.

CEC 2010q- CEC / A. Greenberg (TN 57321). Staff Decision Matrix. Submitted to CEC on 6/24/2010.

CEC 2010r- CEC / A. Greenberg (TN 57264) Staff Draft Summary of SBCFD Responses to Solar Power Plants. Submitted to CEC on 6/22/2010.

CSBFD 2010a- San Bernardino County Fire Department (TN 57267) SBCFD - Response Log 1998 to 2009 Submitted to CEC on 6/22/2010.

CSBFD 2010b- San Bernardino County Fire Department (TN 57268) SBCFD - Mitigation Response Material from June 2010. Submitted to CEC on 6/22/2010.

CSBFD 2010c- San Bernardino County Fire Department (TN 57270) SBCFD - Log Notes from January 1999. Submitted to CEC on 6/22/2010.

CSBFD 2010d- San Bernardino County Fire Department (TN 57271) SBCFD - Activity Log Submitted to CEC on 6/22/2010.

CSBFD 2010e- San Bernardino County Fire Department (TN 57273) SBCFD - Plan Reviews at Solar Plants. Submitted to CEC on 6/22/2010.

CSBFD 2010g- San Bernardino County Fire Department (TN 57287) SBCFD - Haz Mat Inspections. Submitted to CEC on 6/22/2010.

CSBFD 2010h- San Bernardino County Fire Department (TN 57288) EMS Response From SBCFD. Submitted to CEC on 6/22/2010.

CSBFD 2010i- San Bernardino County Fire Department (TN 57303) SBCFD staffing cost estimates for a fire station. Submitted to CEC on 6/24/2010.

CSBFD 2010j- San Bernardino County Fire Department (TN 57304) SBCFD Estimated Costs Station Construction, Equipment and Staffing. Submitted to CEC on 6/24/2010.

CSBFD 2010k- San Bernardino County Fire Department (TN 57378) SBCFD Map of Renewable Energy Projects, March 2010. Submitted to CEC on 6/29/2010.

CSBFD 2010l- San Bernardino County Fire Department (TN 57410) Estimated Allocation of Fire Facility Costs to Proposed Solar Energy Installations prepared

by Hoffman Associates for San Bernardino County Fire Department. Submitted to CEC on 7/1/2010.

OSHA 2010a- Occupational Safety and Health Administration (TN 57384) Fire Fighters' Two-in/Two-out Regulation. Submitted to CEC on 6/29/2010.

CSBFD 2010i- San Bernardino County Fire Department (TN 57303) SBCFD
staffing cost estimates for a fire station.

FY 09/10 Position Title	Pay Grade	Step	Ben 5	Fill #	Hrs	Rate	Salary- Regular	Overtime	Retirement Employer Paid SAF	Retirement - Employer Pickup	Med Premium Subsidy	UI	Soc Sec - Medicare	Workers Comp	Life Insurance/ RMT	Uniform	Total	# of Emp	Total for # of Emp		
Costed @ Step 11																					
BG Fire Fighter (PM)	893	11	PMREG	1	128	\$22.78	84,511	4,761	24,791	5,999	8,836	112	1,294	5,963	809	1050	138,126	3	414,379		414379
BG Engineer	894	11		1	128	\$26.12	89,304	5,459	25,914	6,271	8,836	112	1,374	6,330	927	1050	145,577	3	436,732		436732
BG Captain I	895	11		1	128	\$31.07	106,228	6,494	30,825	7,459	8,836	112	1,634	7,530	1,103	1050	171,271	3	513,812		
Totals							280,043	16,714	81,530	19,729	26,508	336	4,302	19,823	2,839	3,150	454,974	9	1,364,923		851,111
Costed @ varied Steps 7, 9, & 11																					
BG Fire Fighter (PM)	893	7	PMREG	1	128	\$20.65	77,229	4,316	22,678	5,488	8,836	112	1,182	5,447	733	1050	127,071	3	381,214		
BG Engineer	894	9		1	128	\$24.89	85,098	5,202	24,694	5,976	8,836	112	1,309	6,032	884	1050	139,193	3	417,579		
BG Captain I	895	11		1	128	\$31.07	106,228	6,494	30,825	7,459	8,836	112	1,634	7,530	1,103	1050	171,271	3	513,812		
Totals							268,555	16,012	78,197	18,923	26,508	336	4,126	19,009	2,720	3,150	437,535	9	1,312,605		

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CSBFD 2010j- San Bernardino County Fire Department (TN 57304) SBCFD
Estimated Costs Station Construction, Equipment and Staffing.

San Bernardino County Fire								
Fire Service Plan								
Estimated Costs Station Construction, Equipment & Staffing								
Re Newable Energy Facilities Mitigation Costs			Solar One Calico		Ivanpah		Abengoa	
Fire Station			Harvard	Amboy	Baker	Mt Pass	Hinkley	Kramer
Improvement yr			2011	2012	2011	2012	2011	2012
Station Construction								
Architecture/Eng				252,000		770,407		770,407
Construction				1,500,000		2,690,616		2,690,616
Proj Mgt/Misc				348,605		366,035		366,035
Station Set up Costs				336,973		136,973		136,973
Total Station Const Costs			0	2,437,578	0	3,964,031	0	3,964,031
Type 1 Engine				724,605		724,605		724,605
Total Pre Operation Cost			0	3,162,183	0	4,688,636	0	4,688,636
								12,539,455
Annual Operating Costs								
Staffing			1,837,165	1,837,165	1,837,165	1,837,165	1,837,165	1,837,165
Services & Supplies				102,752		102,752		102,752
Engine Replacement			37,929	37,929	37,929	37,929	37,929	37,929
Est Annual Operating Costs								
			1,875,094	1,977,846	1,875,094	1,977,846	1,875,094	1,977,846
Total Start Up Cost			1,875,094	5,140,029	1,875,094	6,666,482	1,875,094	6,666,482
Pre Operational +								
Annual Operating Costs								
								36,637,730
Architecture/ Eng @ 2% per year								
Construction @ 2.5% per year								
Staffing @ 5% per year								
Services Supplies @3% per year								

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CEC 2010q- CEC / A. Greenberg (TN 57321). Staff Decision Matrix.

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Emergency Response Matrix

DATE JUN 24 2010

RECD. JUN 24 2010

A. Response Criteria

1. Inspections

- a. minimal need
- b. average need
- c. significant need

points weighting factor

0.10

1
3
5

Net -->

SEGS 4-7

SEGS 8-9

AMS

3

3

3

0.3

0.3

0.3

2. Fire

0.50

A. Quantity liquid fuel or hydrogen gas stored on-site

0.20

- a. <1,000 gal or <1000 lbs hydrogen gas
- b. >1000 and <100,000 gal or <10,000 lbs hydrogen gas
- c. >100,000 gal or >10,000 lbs hydrogen gas

1
2
5

Net -->

5

5

5

1.00

1.00

1.00

B. Fire/Explosion off-site consequences

0.30

- a. Limited to site
- b. Potential for smoke and/or fire and/or minor blast effects off-site
- c. Potential for major fire/blast structure damage and/or injuries/fatalities off-site and/or major hwy disruption/closure

1
2
5

Net -->

5

5

1.50

0.30

1.50

3. HazMat

0.10

A. Proximity to sensitive receptors

0.05

- a. no sig quant of hazmats or no potential for off-site impacts within 1/2 mile
- b. <5 receptors within 1/2 mile
- c. 5-10 receptors within 1/2 mile
- d. >10 within 1/2 mile
- e. impacts major highway/interstate

1
2
3
4
5

Net -->

5

0.25

0.05

0.10

B. Hazmat response time

0.05

- a. <30 minutes
- b. 30 - 60 minutes
- c. >60 minutes

1
3
5

Net -->

3

3

3

0.15

0.15

0.15

4. Rescue

0.15

- a. <30 minutes
- b. 30 - 60 minutes
- c. >60 minutes

1
3
5

Net -->

1

1

1

0.15

0.15

0.15

5. EMS

EMS response time

0.15

- a. in-house EMT or <5 minutes response time
- b. 5 - 10 minute response time
- c. >10 and <15 minute response time
- d. >15 and <30 minute response time
- e. >30 minute response time

1
2
3
4
5

Net -->

4

3

3

0.60

0.45

0.45

Sum weighting factors

1.00

TOTAL SCORE

3.95

2.4

3.65

LOW Priority: additional resources and mitigation may be needed.

0.1 - 1.5

MEDIUM Priority: additional resources and mitigation needed.

1.5 - 2.5

HIGH Priority: very significant need for additional resources and mitigation.

2.5 - 3.5

VERY HIGH Priority: urgent need for additional resources and mitigation.

>3.5

DECLARATION OF
Alvin J. Greenberg, Ph.D.

I, **Alvin J. Greenberg, Ph.D.** declare as follows:

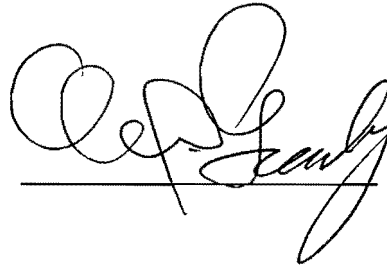
1. I am presently a consultant to the California Energy Commission, Energy Facilities Siting and Environmental Protection Division.
2. A copy of my professional qualifications and experience was attached to my previous testimony and incorporated by reference herein.
3. I prepared staff's supplemental opening testimony on **Worker Safety/Fire Protection** for the **Abengoa Mojave Solar** project based on my independent analysis of the amendment petition, supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.
4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue addressed therein.
5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 1, 2010

At: Sacramento, California

Signed: _____

A handwritten signature in black ink, appearing to read 'Alvin J. Greenberg', written over a horizontal line.



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
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APPLICATION FOR CERTIFICATION
FOR THE **ABENGOA MOJAVE
SOLAR POWER PLANT**

Docket No. 09-AFC-5
PROOF OF SERVICE
(Revised 6/8/2010)

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DECLARATION OF SERVICE

I, Teraja` Golston, declare that on July 2, 2010, I served and filed copies of the attached (09-AFC-5) Abengoa Mojave – Staff's Supplemental Opening Testimony Regarding Proposed CoC Worker Safety 6 and AMS Staff Errata to SSA Part B – Air Quality (Exhibit 305). The original documents, filed with the Docket Unit, are accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[<http://www.energy.ca.gov/sitingcases/abengoa/index.html>].

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(Check all that Apply)

For service to all other parties:

- ☒ sent electronically to all email addresses on the Proof of Service list;
- ☒ by personal delivery;
- ☒ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

For filing with the Energy Commission:

- ☒ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 09-AFC-5
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
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I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original signed by: _____
Teraja` Golston